PREFACE

IASWS 2014: The interactions between sediments and water

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Rhodes University, Grahamstown, South Africa, was the venue for the 13th IASWS International Conference, held from 15-18th July, 2014. This international meeting built upon and expanded developing research in South Africa on sediment processes and followed on from a successful meeting organized by Rowntree and Foster on behalf of the Southern African Association of Geomorphologists (SAAG) held in Grahamstown in 2010 and the publication of a special issue of the journal Land Degradation and Development edited by Rowntree et al. (2012).

The International Association for Sediment Water Science (IASWS) seeks to promote, encourage and recognize excellence in scientific research related to sediments and their interactions with water and biota in fluvial, lacustrine and

marine systems and with particular reference to problems of environmental concern. For those interested in the history and background of IASWS, the development of the association and its major conference themes since 1976, we would direct you to the review published by Petticrew (2009). The conference in Grahamstown brought together 43 international delegates from 18 countries and 31 local delegates including earth scientists, biologists, chemists and environmental engineers whose interests pertain to sediment–water interactions in all aquatic systems. Student participation was supported by sponsorship from IASWS and the Department of the Environmental Affairs, South Africa. In total, 10 students presented papers. Excluding keynote papers, a total of 52 oral papers and 24 poster papers were presented at the conference.

In keeping with the interdisciplinary ethos of IASWS (see Petticrew 2009) the conference was organized into six conference themes; papers presented at the conference contributed in all of these thematic areas.

- The impact of sediments on ecosystem functioning and human health.

- Multiple stressors (nutrients, pollutants, land use, global change) in aquatic ecosystems.

- Scale-dependent connectivity in aquatic systems.

- Technical and methodological advances in sediment-water science.

- Physical and biochemical processes in sediment systems.

- Integrating science into policy and governance for managing sediment and sediment-associated nutrient and contaminant transport.

Professor Angela Gurnell, Queen Mary College, University of London, England, introduced the first theme with her keynote address on ‘Plants moderate sediment dynamics in fluvial systems.’ The second keynote speaker was Prof. Janine Adams, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa who introduced the multiple stressors theme with her paper on ‘Multiple stressors in South African estuaries: conservation and management responses.’ Dr Arthur Horowitz, United States Geological Survey, USA, our third keynote speaker, pointed to the multiple ways in which we can get water quality monitoring wrong with his talk on ‘A cautionary tale for environmental monitoring: Are we really measuring what we think, and if so, are we doing it right?’. The final keynote speaker was Dr Chris Dickens from the Institute of Natural Resources, South Africa, who addressed South Africa’s water management issues through a talk on ‘Setting objectives for water resources management in South Africa.’

An additional conference activity was a workshop organised through the Water Research Commission (WRC) of South Africa on "Sediment impacts on aquatic ecosystems - how can international experience inform South African research

directions." This was chaired by Prof. Tally Palmer from the Institute for Water Research, Rhodes University. Delegates formed small groups to discuss how water and sediment research could be integrated into the WRC's five "Lighthouses": water sensitive design; climate change; water, energy and food security; the Green Village; and freshwater governance. The workshop opened up an alternative conference space and through the group discussions provided an opportunity for the local and international delegates to interact with each other and share ideas.

At the opening reception, our resident Grahamstown poet, Harry Owen, read a specially commissioned poem to welcome IASWS delegates to the conference. With Harry's permission, and our gratitude, we reproduce his poem below.

Decreed

Washed down from the moor by torrents

into a coarse alluvium of cities and towns,

we settle as dregs at the mouth of the great river.

Good at deposits, of course – on houses, cars,

plasma screens, wives – we find our lives weathered,

eroded, reduced from distant heights as

in wind, water, vodka, ice we bear before us

a deep scale of deposition in newly-worked

fragmenting ecosystems of the mind.

Next, thin precipitate of fluvial histories,

biota sluiced out to lacustrine gels shallow

as a salt-pan, the holy water of ourselves

evaporates as we harden into stone.

Or do we rather dream within the embrace

of sediment? What sands will scratch the epitaph

of our time: that we were betrothed and married

to the soil but proved unfaithful? Such silt

may yet leave grounds for an absolute decree

as frail splinters settle to stone, to earth again,

petrified words in the yawning mouths of rivers.

Harry Owen (Grahamstown, July 2014)

This is the second IASWS proceeding to be published as a Special Issue of the Journal of Soils and Sediments (JSS); the previous meeting held in Dartmouth UK was also published in this journal in volume 10, issue 12 (see Wharton et al. 2010). The themes of this meeting, and the papers contained in the published volume, closely match those of the host journal identified in their editorial by Owens and Xu (2011). We sincerely hope that this collaboration with JSS continues into the future as a mutually beneficial arrangement between our Association and JSS.

Papers included in this volume represent all conference themes other than the management theme 'Integrating science into policy and governance for managing sediment and sediment-associated nutrient and contaminant transport'. It is unfortunate that no papers were submitted for publication for this specific theme but five papers presented at the conference made important statements about management frameworks and tools from South Africa, the UK and France. Many of the papers published in this volume, however, do have important messages for catchment managers and policy makers.

Two papers represent the theme 'The impact of sediments on ecosystem functioning and human health'. Dadi et al. (2015, this issue) describe a method for calculating the carbon flux between sediments and water using an incubation process. Glavas et al. (2015) investigate the seasonal changes in the chemical composition of Petola, a few millimetre thick microbial mat that covers the bottom of the crystallizing salt basins from which salt is extracted in Slovenia.

Two papers, by McDowell and Hill (2015, this issue) and Vrzel and Ogrinc (2015) represent the theme 'Multiple stressors (nutrients, pollutants, land use, global change) in aquatic ecosystems'. Both papers focus on variation in nutrient loads in relation to catchment factors. McDowell and Hill (2015, this issue) examine the role of streambed sediment in regulating organic phosphorus in New Zealand rivers. Vrzel and Ogrinc (2015) present data on long-term nitrogen (N) and phosphorus (P) concentrations for the Sava River Basin (SRB) at eight locations in Slovenia, Croatia, and Serbia.

A further two papers represent the theme 'Scale-dependent connectivity in aquatic systems'. Papers by Pulley et al. (2015) and van der Waal et al. (2015) both demonstrated the use of magnetic fingerprinting to establish source-sink connectivity in South African catchments.

Two papers by Abia et al. (2015a,b) contribute to the theme 'Technical and methodological advances in sediment-water science'. Both papers are concerned with the link between faecal pollution and streambed sediments. The first paper identifies key faecal indicator species, the second describes an improved method for enumerating bacteria in sediment.

The theme 'Physical and biochemical processes in sediment systems' is well represented in this volume with six papers covering a wide range of topics but all with an interest in coastal processes. Mandac and Faganeli (2015) looked at sediment deposition in Adriatic ports, Koron et al. (2015) considered nutrient regeneration and organic matter degradation in surface coastal sediments in the Gulf of Trieste. Kamau et al. (2015a,b) present two papers on the impact of sewage on mangroves on the Kenyan coast; mangrove ecosystems are also examined by Kumar and Ramanathan (2015) who examine the distribution of trace metals in the world's largest mangrove ecosystem at Sundarban (India and Bangladesh). Jędruch et al. (2015) discuss mercury–sediment relationships in the Baltic Sea.

We hope that this volume makes a useful contribution to issues surrounding sediment–water interactions and that you enjoy the papers as much as we enjoyed organizing the conference and putting this collection of papers together. Our thanks go to one of the journal's editor-in-chief (Phil Owens) for guiding us through the editorial process for JSS; to Moira Ledger for keeping our feet firmly on the ground and providing much appreciated technical support and editorial assistance; and to the many referees who spent much time commenting upon and improving the papers collected together in this volume. Without your input this volume would never have appeared. We would also like to acknowledge the generous sponsorship from the Water Research Commission, The National Research Foundation and the Department of Environmental Affairs, South Africa, who supported the attendance of our keynote speakers and student delegates.

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